OBSERVATIONS & RECOMMENDATIONS

After reviewing data collected from **RESERVOIR POND** the program coordinators recommend the following actions.

Welcome to the New Hampshire Volunteer Lake Assessment Program! As you continue your participation in VLAP the database you create for your water body will help you track trends in lake quality and identify potential problems. As a rule of thumb, try to sample once per month during the summer. Other special sampling programs include monitoring for non-point sources of pollution to the lake, and more frequent, long-term sample collection to establish a complex data set of your lake's water quality. We understand that future sampling will depend upon volunteer availability, water monitoring goals, and funding. **Trend analysis is not feasible with only a few data points.** It can take a few years of data collection to obtain an adequate set of baseline data. Frequent and consistent sampling will ensure useful data for future analyses. Contact the VLAP Coordinator this spring to schedule our annual lake visit. If your group feels they need a refresher in sampling techniques, call us early to make an appointment. Please consult the Interpreting Data and Monitoring Parameters sections of this report when trying to understand data.

FIGURE INTERPRETATION

- Figure 1: These graphs illustrate concentrations of chlorophyll-a in the water column. Algae are microscopic plants that are a natural part of lake ecosystems. Algae contain chlorophyll-a, a pigment necessary for photosynthesis. A measure of chlorophyll-a can indicate the abundance of algae in a lake. The current year data (the top graph) show in-lake chlorophyll-a is less than the state mean. We hope this will become the trend in the future. While algae are present in all lakes, an excess amount of any type is not welcomed. Concentrations can increase when there are external and internal sources of phosphorus, which is the nutrient algae depend upon for growth. It's important to continue the education process and keep residents aware of the sources of phosphorus and how it influences lake quality.

- Figure 2: Water clarity is measured by using a Secchi disk. Clarity, or transparency, can be influenced by such things as algae, sediments from erosion, and natural colors of the water. The graphs

on this page show historical and current year data. The lower graph shows lake transparency is very close to the New Hampshire mean. The 2000 sampling season was considered to be wet and, therefore, average transparency readings are expected to be slightly lower than last year's readings. Higher amounts of rainfall usually cause more eroding of sediments into the lake and streams, thus decreasing clarity.

- Figure 3: These figures show the amounts of phosphorus in the epilimnion (the upper layer in the lake) and the hypolimnion (the lower layer); the inset graphs show current year data. Phosphorus is the limiting nutrient for plants and algae in New Hampshire waters. Too much phosphorus in a lake can lead to increases in plant growth over time. These graphs show in-lake phosphorus levels are quite low in both the epilimnion and hypolimnion. The hypolimnetic phosphorus concentration in May was well below the state median. One of the most important approaches to reducing phosphorus levels is educating the public. Humans introduce phosphorus to lakes by several means: fertilizing lawns, septic system failures, and detergents containing phosphates are just a few. Keeping the public aware of ways to reduce the input of phosphorus to lakes means less productivity in the lake. Contact the VLAP coordinator for tips on educating your lake residents or for ideas on testing your watershed for phosphorus inputs.

OTHER COMMENTS

- The species of plankton observed in May were mostly of the golden-brown family (Table 2). The presence of this type of phytoplankton shows us Reservoir Pond has good water quality. Next year we would like to visit your pond later in the summer to see which type of plankton is most dominant, since plankton types can change over the course of the summer.

- Conductivity levels were very low in and around the pond (Table 6) this year. Conductivity was particularly low this year throughout the state, most likely as a result of the excess rains, which tend to dilute and flush out any pollutants. It is difficult to make comparisons between watersheds' conductivities, as the characteristics of each watershed are different and can affect conductivity values differently. Conductivity increases often indicate the influence of human activities on surface waters. Septic system leachate, agricultural runoff, iron deposits, and road runoff can all influence conductivity.

- Dissolved oxygen was high at all depths of the lake (Table 9). As lakes age, oxygen is depleted in the lower layer by the process of decomposition. The lack of this aging indicator is a sign of the lake's overall health.

- The Mud Pond Inlet had high turbidity in May (Table 11). This may

be a cause of the beaver dam noted in the inlet. We will observe the turbidity of this inlet next year to see if the high value returns.

NOTES

- Monitor's Note (5/30/00): Saw 2 geese and loons. Beaver dam in Mud Pond inlet, comes from wetland. Algae visible in Townline Brook.

USEFUL RESOURCES

Beavers and Their Control. UNH Cooperative Extension/NH Fish and Game, 1990. (603) 862-2346

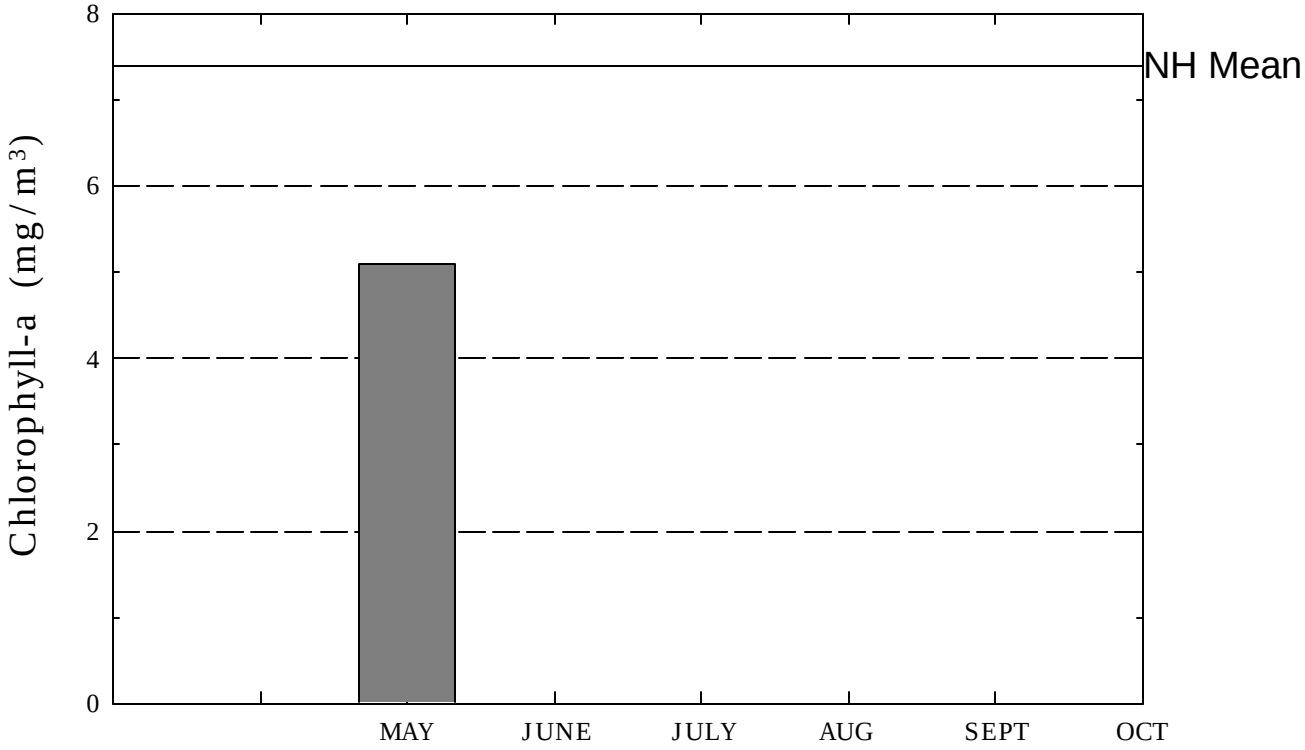
Wetlands: More Important Than You Think, NHDES Booklet, (603) 271-3503 or www.state.nh.us

Lake Protection Tips: Some Do's and Don'ts for Maintaining Healthy Lakes, WD-BB-9, NHDES Fact Sheet, (603) 271-3503 or www.state.nh.us

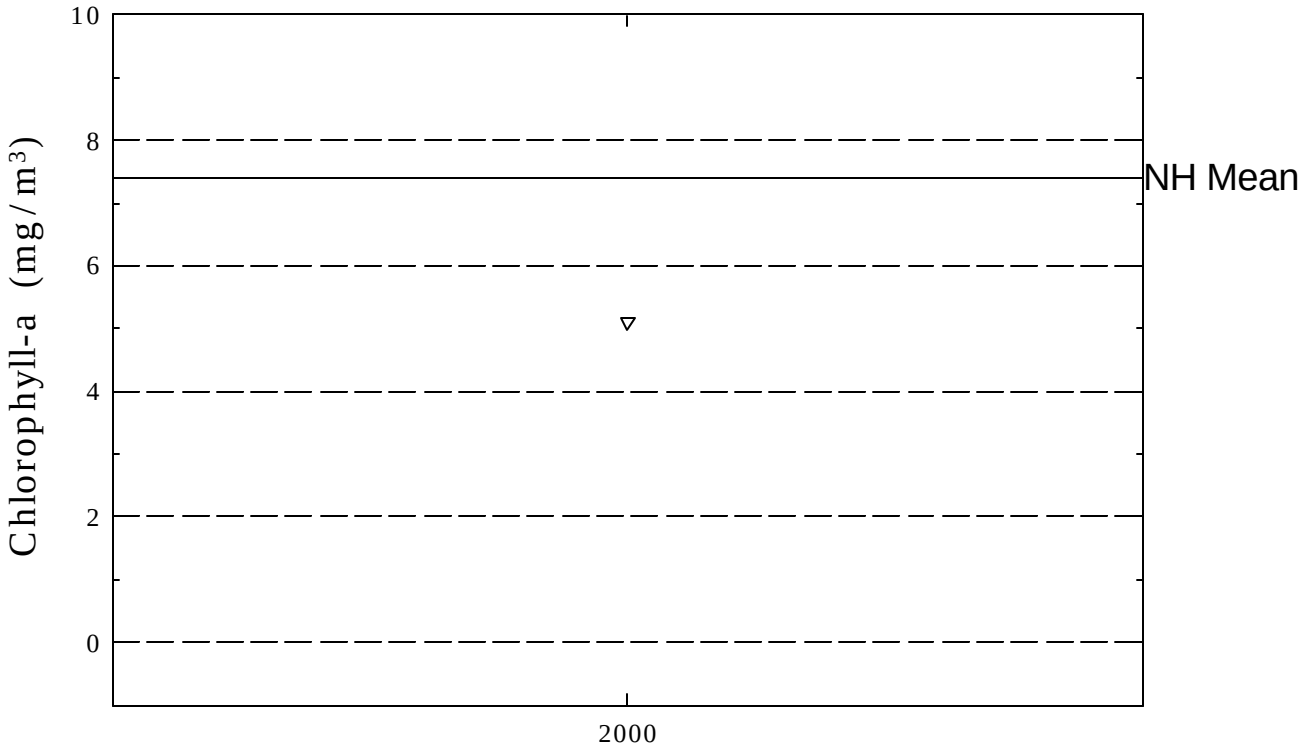
Effects of Phosphorus on New Hampshire's Lakes, NH Lakes Association pamphlet, (603) 226-0299 or www.nhlakes.org

Reservoir Pond

Figure 1. Monthly and Historical Chlorophyll-a Results



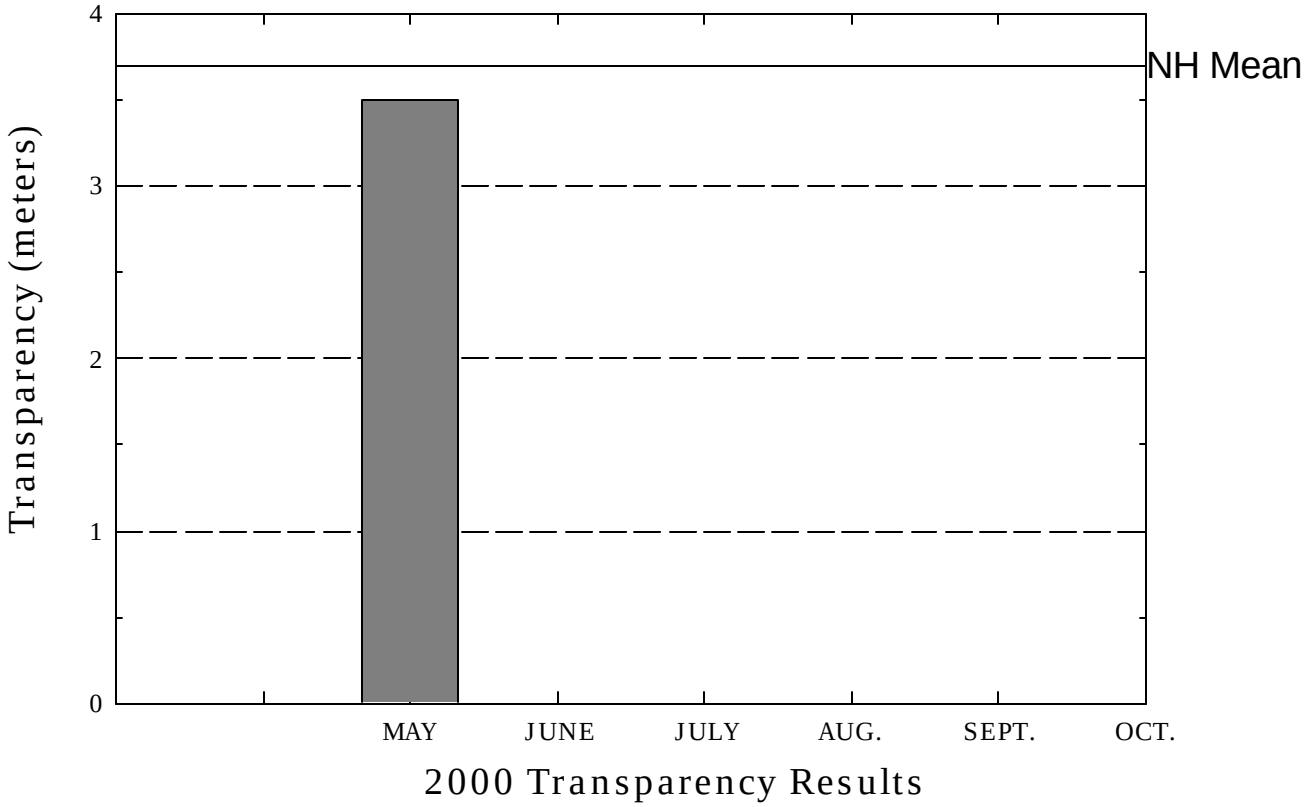
2000 Chlorophyll-a Results



Historical Chlorophyll-a Results

Reservoir Pond

Figure 2. Monthly and Historical Transparency Results



Reservoir Pond

Figure 3. Monthly and Historical Total Phosphorus Data.

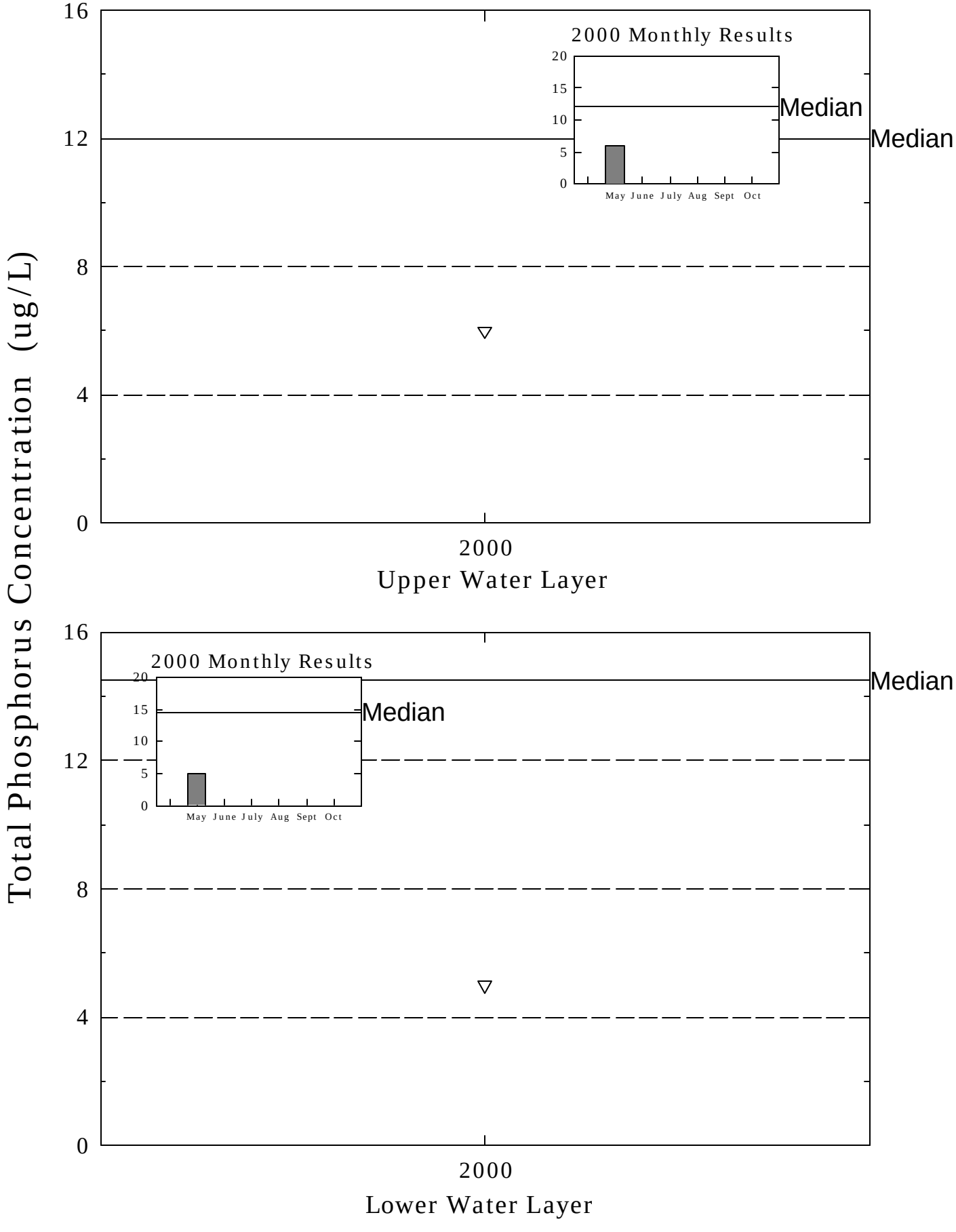


Table 1.

RESERVOIR POND

LYME

Chlorophyll-a results (mg/m^3) for current year and historical sampling periods.

Year	Minimum	Maximum	Mean
2000	5.10	5.10	5.10

Table 2.

RESERVOIR POND

LYME

Phytoplankton species and relative percent abundance.

Summary for current and historical sampling seasons.

Date of Sample	Species Observed	Relative % Abundance
05/30/2000	UROGLENOPSIS	44
	DINOBRYON	38
	ASTERIONELLA	5

Table 3.

RESERVOIR POND

LYME

Summary of current and historical Secchi Disk transparency results (in meters).

Year	Minimum	Maximum	Mean
2000	3.5	3.5	3.5

Table 4.

RESERVOIR POND

LYME

pH summary for current and historical sampling seasons.
Values in units, listed by station and year.

Station	Year	Minimum	Maximum	Mean
CUTTER BK				
	2000	6.36	6.36	6.36
EPILIMNION				
	2000	6.88	6.88	6.88
HYPOLIMNION				
	2000	5.85	5.85	5.85
METALIMNION				
	2000	5.83	5.83	5.83
MUD POND INLET				
	2000	5.54	5.54	5.54
OUTLET				
	2000	6.32	6.32	6.32
TOWNLINE BK				
	2000	6.36	6.36	6.36

Table 5.

RESERVOIR POND

LYME

Summary of current and historical Acid Neutralizing Capacity.
Values expressed in mg/L as CaCO .

Epilimnetic Values

Year	Minimum	Maximum	Mean
2000	2.00	2.00	2.00

Table 6.

RESERVOIR POND

LYME

Specific conductance results from current and historic sampling seasons. Results in uMhos/cm.

Station	Year	Minimum	Maximum	Mean
CUTTER BK				
	2000	22.7	22.7	22.7
EPILIMNION				
	2000	19.2	19.2	19.2
HYPOLIMNION				
	2000	20.4	20.4	20.4
METALIMNION				
	2000	19.4	19.4	19.4
MUD POND INLET				
	2000	17.7	17.7	17.7
OUTLET				
	2000	19.1	19.1	19.1
TOWNLINE BK				
	2000	23.9	23.9	23.9

Table 8.

RESERVOIR POND

LYME

Summary historical and current sampling season Total Phosphorus data. Results in ug/L.

Station	Year	Minimum	Maximum	Mean
CUTTER BK				
	2000	9	9	9
EPILIMNION				
	2000	6	6	6
HYPOLIMNION				
	2000	5	5	5
METALIMNION				
	2000	6	6	6
MUD POND INLET				
	2000	6	6	6
OUTLET				
	2000	< 5	5	5
TOWNLINE BK				
	2000	< 5	5	5

Table 9.

RESERVOIR POND

LYME

Current year dissolved oxygen and temperature data.

Depth (meters)	Temperature (celsius)	Dissolved Oxygen (mg/L)	Saturation (%)
		May 30, 2000	
0.1	15.7	9.1	91.5
1.0	14.6	9.3	91.1
2.0	14.2	9.2	89.5
3.0	13.9	9.1	88.1
4.0	13.3	8.9	84.9
5.0	11.7	9.1	83.9
6.0	8.1	8.9	75.4
7.0	7.8	8.8	74.2
8.0	7.7	8.9	74.1
9.0	7.6	9.1	75.8
10.0	7.5	9.1	75.7
10.5	7.5	9.4	78.2

Table 10.

RESERVOIR POND

LYME

Historic Hypolimnetic dissolved oxygen and temperature data.

Date	Depth (meters)	Temperature (celsius)	Dissolved Oxygen (mg/L)	Saturation (%)
May 30, 2000	10.5	7.5	9.4	78.2

Table 11.

RESERVOIR POND

LYME

Summary of current year and historic turbidity sampling.
Results in NTU's.

Station	Year	Minimum	Maximum	Mean
CUTTER BK				
	2000	0.2	0.2	0.2
EPILIMNION				
	2000	0.3	0.3	0.3
HYPOLIMNION				
	2000	0.2	0.2	0.2
METALIMNION				
	2000	0.3	0.3	0.3
MUD POND INLET				
	2000	1.5	1.5	1.5
OUTLET				
	2000	0.3	0.3	0.3
TOWNLINE BK				
	2000	0.2	0.2	0.2